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NOTICE OF ALLOWANCE AND FEE(S) DUE

26021 7590 09/10/2009

HOGAN & HARTSON L.L.P.
1999 AVENUE OF THE STARS
SUITE 1400
LOS ANGELES, CA 90067

EXAMINER

ALUNKAL, THOMAS D

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 09/10/2009

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/697,455

10/30/2003

Tsuyoshi Yamamoto

81784.0288

7963

TITLE OF INVENTION: TILT CONTROL METHOD AND APPARATUS FOR OPTICAL DISC RECORDING AND PLAYBACK APPARATUS

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO | \$1510 | \$300 | \$0 | \$1810 | 12/10/2009 |

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

26021 7590 09/10/2009

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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| |
|--------------------|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
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10/697,455 10/30/2003 Tsuyoshi Yamamoto 81784.0288 7963

TITLE OF INVENTION: TILT CONTROL METHOD AND APPARATUS FOR OPTICAL DISC RECORDING AND PLAYBACK APPARATUS

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|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO | \$1510 | \$300 | \$0 | \$1810 | 12/10/2009 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|-------------------|----------|----------------|
| ALUNKAL, THOMAS D | 2627 | 369-053190 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
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- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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| 10/697,455 | 10/30/2003 | Tsuyoshi Yamamoto | 81784.0288 | 7963 |
| 26021 | 7590 | 09/10/2009 | EXAMINER | |
| HOGAN & HARTSON L.L.P. 1999 AVENUE OF THE STARS SUITE 1400 LOS ANGELES, CA 90067 | | | ALUNKAL, THOMAS D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2627 | |
| DATE MAILED: 09/10/2009 | | | | |

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1238 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1238 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

| | | | |
|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/697,455 | YAMAMOTO ET AL. | |
| | Examiner | Art Unit | |
| | THOMAS D. ALUNKAL | 2627 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to BPAI decision dated 8/26/09.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

/Thomas D Alunkal/
Examiner, Art Unit 2627

DETAILED ACTION

Examiner's Comment

Based on the BPAI decision dated 8/26/08, the previous 35 U.S.C. 103(a) rejections of claim 1-12 have been withdrawn. After further consideration of the claims, the Examiner has determined that the pending claims are in condition for allowance.

Allowable Subject Matter

Claims 1-12 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claims 1, 3, 5, 7, 9, and 11.

Regarding claim 1, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of: recording an offset adjustment signal in a test recording area provided on an optical disc, **wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil**; thereafter playing back an RF signal of said offset adjustment signal that was recorded on the optical disc; detecting the peak level in the RF signal of said offset adjustment signal that was played back; **and setting said driving signal level, when the detected peak level reaches a maximum, as an offset value for the driving signal to be supplied to the tilt adjustment coil**; wherein

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the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Regarding claim 3, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of: recording an offset adjustment signal in a test recording area provided on an optical disc, ***wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil***; thereafter playing back an RF signal of said offset adjustment signal that was recorded on the optical disc; detecting the bottom level in the RF signal of said offset adjustment signal that was played back; ***and setting said driving signal level, when the detected bottom level reaches a minimum, as an offset value for the driving signal to be supplied to the tilt adjustment coil***; wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Regarding claim 5, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control method in an optical pickup including a tilt adjustment coil for adjusting the tilt of an objective lens, comprising the steps of: recording an offset adjustment signal in a test recording area provided on an optical disc, ***wherein said offset adjustment signal is recorded while modifying a driving signal level supplied to said tilt adjustment coil***; thereafter playing back an RF signal of said offset adjustment signal that was recorded on the optical disc; detecting the peak level and the bottom level in the RF signal of said offset adjustment signal that was

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played back; **and setting said driving signal level, when the difference between the detected peak level and bottom level reaches a maximum**, as an offset value for the driving signal to be supplied to the tilt adjustment coil; wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Regarding claim 7, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control apparatus for adjusting the tilt of an objective lens in an optical pickup comprising: a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens; a photo detector circuit for obtaining an RF signal by detecting reflected light from the disc via said objective lens; a peak level detector circuit for detecting the peak level of the RF signal from said photo detector circuit; a tilt adjustment coil for controlling the tilt of said objective lens; and a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil; **an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil**, and the relationship between driving signal level and recording position is stored; said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc; the peak level detector circuit detects the peak level of the RF signal in said offset adjustment signal; and **the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the maximum of the detected peak level and uses the detected driving signal**

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level as an offset value for tilt control; wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Regarding claim 9, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control apparatus for adjusting the tilt of an objective lens in an optical pickup comprising: a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens; a photo detector circuit for obtaining an RF signal by detecting reflected light from the disc via said objective lens; a bottom level detector circuit for detecting the bottom level of the RF signal from said photo detector circuit; a tilt adjustment coil for controlling the tilt of said objective lens; and a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil; **an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil**, and the relationship between driving signal level and recording position is stored; said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc; the bottom level detector circuit detects the bottom level of the RF signal in said offset adjustment signal; and **the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the minimum of the detected bottom level and uses the detected driving signal level as an offset value for tilt control**; wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Regarding claim 11, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a tilt control apparatus for adjusting the tilt of an objective

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lens in an optical pickup comprising: a signal recording circuit for recording a signal by irradiating light onto a disc via said objective lens; a photo detector circuit for obtaining an RF signal by detecting reflected light from the disc via said objective lens; a peak level detector circuit for detecting the peak level of the RF signal from said photo detector circuit; a bottom level detector circuit for detecting the bottom level of the RF signal from said photo detector circuit; a tilt adjustment coil for controlling the tilt of said objective lens; and a tilt control circuit for controlling the driving signal level supplied to said tilt adjustment coil; ***an offset adjustment signal is written to the disc by recording a signal to the disc by said signal recording circuit while said tilt control circuit modifies the driving signal level to the tilt control coil***, and the relationship between driving signal level and recording position is stored; said photo detector circuit detects an RF signal of the offset adjustment signal that was recorded on the disc; said peak level detector circuit detects the peak level of the RF signal in said offset adjustment signal; said bottom level detector circuit detects the bottom level of the RF signal in said offset adjustment signal; and ***the tilt control circuit detects the driving signal level of the tilt control coil corresponding to the maximum of the difference between the detected peak level and bottom level and uses the detected driving signal level as an offset value for tilt control***; wherein the tilt angle of the optical pickup is changed by changing the level of the drive current supplied to the tilt adjustment coil.

Dependent claims 2, 4, 6, 8, 10, and 12, are allowed with their respective base claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Park (US PgPub 2002/0060964) discloses a tilt controlling method and apparatus. Akagi et al. (US 6,434,096) discloses an optical information recording/reproducing device. Matsumoto (US 7,046,600) discloses an optical disc apparatus with laser power control matching liner recording velocity. Kahlman et al. (US 6,418,096) discloses an apparatus for reading an optical data carrier. Pozidis et al. (US 6,731,699) discloses a detector, reproduction system, receiver and method. Nishiwaki et al. (US 6,704,254) discloses an optical disk device, control method of optical system, medium, and information aggregate. Negishi et al. (US 7,050,367) discloses an optical information recording method and apparatus. Mashimo et al. (US 7,242,653) discloses an optical disc apparatus capable of detecting recording characteristics based on a predetermined signal prerecorded and reproduced. Yamasaki et al. (US PgPub 2002/0041545) discloses an information recording/reproducing apparatus. Koike et al. (US 5,216,649) discloses an optical head with tilt correction servo mechanism. Mochizuki (US 5,502,698) discloses an automatic attitude correcting system for optical disc device. Takamine et al. (US 5,805,543)

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discloses a tilt control apparatus. Furukawa (US 6,430,130) discloses servo control correcting errors in tilt angle of optical beam. Fujita (US 6,526,007) discloses a tilt detection method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS D. ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas D Alunkal/
Examiner, Art Unit 2627

/Thang V. Tran/
Primary Examiner, Art Unit 2627